1

2

3

4   UNITED STATES DISTRICT COURT

5   NORTHERN DISTRICT OF CALIFORNIA

6

7   CYWEE GROUP LTD,   Case No. 14-cv-01853-HSG

            Plaintiff,
8   **CLAIM CONSTRUCTION ORDER**

9   v.

10   APPLE INC.,

            Defendant.
11

12

13   The parties in this patent infringement action seek construction of three claim terms found

14   in United States Patent Nos. 8,441,438 ("the '438 Patent") and 8,552,978 ("the '978 Patent").

15   This order follows claim construction briefing, a technology tutorial, and a claim construction

16   hearing.

17   **I.   LEGAL STANDARD**

18   Claim construction is a question of law to be determined by the Court. *See Markman v.*

19   *Westview Instruments, Inc.*, 52 F.3d 967, 979 (Fed. Cir. 1995). "The purpose of claim

20   construction is to determine the meaning and scope of the patent claims asserted to be infringed."

21   *O2 Micro Int'l Ltd. v. Beyond Innovation Tech. Co.*, 521 F.3d 1351, 1360 (Fed. Cir. 2008)

22   (internal quotation marks omitted).

23   Generally, claim terms should be given their ordinary and customary meaning—*i.e.*, the

24   meaning that the terms would have to a person of ordinary skill in the art at the time of the

25   invention. *Phillips v. AWH Corp.,* 415 F.3d 1303, 1312–13 (Fed. Cir. 2005) (en banc). There are

26   only two circumstances where a claim is not entitled to its plain and ordinary meaning: "1) when a

27   patentee sets out a definition and acts as his own lexicographer, or 2) when the patentee disavows

28   the full scope of a claim term either in the specification or during prosecution." *Thorner v. Sony*

United States District Court
Northern District of California

1   *Comput. Entm't Am. LLC,* 669 F.3d 1362, 1365 (Fed. Cir. 2012).

2   When construing claim terms, the Federal Circuit emphasizes the importance of intrinsic

3   evidence: the language of the claims themselves, the specification, and the prosecution history.

4   *Phillips,* 415 F.3d at 1312–17. The claim language can "provide substantial guidance as to the

5   meaning of particular claim terms," both through the context in which the claim terms are used

6   and by considering other claims in the same patent. *Id.* at 1314. The specification is likewise a

7   crucial source of information. Although it is improper to read limitations from the specification

8   into the claims, the specification is "the single best guide to the meaning of a disputed term."

9   *Id.* at 1315 ("[T]he specification is always highly relevant to the claim construction analysis.

10   Usually, it is dispositive.") (internal quotation marks omitted); *see also Merck & Co. v. Teva*

11   *Pharms. USA, Inc.,* 347 F.3d 1367, 1371 (Fed. Cir. 2003) ("[C]laims must be construed so as to be

12   consistent with the specification.").

13   Despite the importance of intrinsic evidence, courts may also consider extrinsic evidence—

14   technical dictionaries, learned treatises, expert and inventor testimony, and the like—to help

15   construe the claims. *Phillips,* 415 F.3d at 1317–18. For example, dictionaries may reveal what

16   the ordinary and customary meaning of a term would have been to a person of ordinary skill in the

17   art at the time of the invention. *Frans Nooren Afdichtingssystemen B.V. v. Stopaq Amcorr*

18   *Inc.,* 744 F.3d 715, 722 (Fed. Cir. 2014) ("Terms generally carry their ordinary and customary

19   meaning in the relevant field at the relevant time, as shown by reliable sources such as

20   dictionaries, but they always must be understood in the context of the whole document—in

21   particular, the specification (along with the prosecution history, if pertinent)."). Extrinsic evidence

22   is, however, "less significant than the intrinsic record in determining the legally operative meaning

23   of claim language." *Phillips,* 415 F.3d at 1317 (internal quotation marks omitted).

24   **II.   DISCUSSION**

25   **A.   Agreed Terms**

26   The parties have agreed to the construction of the following terms (*see* Dkt. Nos. 47, 61):

27

28

2

United States District Court
Northern District of California

Claim Term	Asserted Claims	Agreed Claim Construction
measured state includes a measurement of said second signal set and a predicted measurement obtained based on the first signal set without using any derivatives of the first signal set	'438 Patent claim 1	at least two axial accelerations, including a measurement of the second signal set and a predicted measurement obtained based on the first signal set without using any derivatives of the first signal set
second computing processor	'978 Patent claim 1	a computing processor physically distinct from but interoperable with the first computing processor
measured magnetisms	'978 Patent claims 1, 10	magnetisms measured by the magnetometer
predicted magnetism	'978 Patent claims 1, 10	plain and ordinary meaning
quaternion	'978 Patent claims 3, 12	no construction needed

In light of the parties' agreement on the proper construction of these terms, the Court adopts the parties' constructions.

B.   Disputed Terms

1.   '438 Patent

The '438 Patent, titled "3D Pointing Device and Method for Compensating Movement Thereof," claims a device and method that measures, calculates, and outputs the movement of the device so that those movements can be translated to a 2D image screen. In the words of the patentee:

> The 3D pointing device comprises an accelerometer to measure or detect axial accelerations Ax, Az, Ay and a rotation sensor to measure or detect angular velocities ω_x, ω_y, ω_z such that resulting deviation including resultant angles comprising yaw, pitch and roll angles in a spatial pointer frame of the 3D pointing device subject to movements and rotations in dynamic environments may be obtained and such that said resulting deviation including said resultant angles may be obtained and outputted in an absolute manner reflecting or associating with the actual movements and rotations of the 3D pointer device of the present invention in said spatial pointer reference frame. . . . [T]he present invention provides an enhanced comparison method to eliminate the accumulated errors as well as noises over time associated with signals generated by a combination of motion sensors, including . . . accelerometers . . . and . . . gyroscopes.

'438 Patent at 4:8-25.

3

1   Independent claim 1 describes:

2   1.   A three-dimensional (3D) pointing device subject to movements
              and rotations in dynamic environments, comprising:

3

4   a housing associated with said movements and rotations of
             the 3D pointing device in a spatial pointer reference frame;

5   a printed circuit board (PCB) enclosed by the housing;

6   a six-axis motion sensor module attached to the PCB,
             comprising a rotation sensor for detecting and generating a
7   first signal set comprising angular velocities ω_x, ω_y, ω_z
             associated with said movements and rotations of the 3D
8   pointing device in the spatial pointer reference frame, an
             accelerometer for detecting and generating a second signal
9   set comprising axial accelerations Ax, Ay, Az associated
             with said movements and rotations of the 3D pointing device
10   in the spatial pointer reference frame; and

11   a processing and transmitting module, comprising a data
             transmitting unit electrically connected to the six-axis motion
12   sensor module for transmitting said first and second signal
             sets thereof and a computing processor for **receiving and
13   calculating said first and second signal sets from the data
             transmitting unit**, communicating with the six-axis motion
14   sensor module to calculate a resulting deviation comprising
             resultant angles in said spatial pointer reference frame by
15   **utilizing a comparison to compare the first signal set with
             the second signal set** whereby said resultant angles in the
16   spatial pointer reference frame of the resulting deviation of
             the six-axis motion sensor module of the 3D pointing device
17   are obtained under said dynamic environments, wherein the
             comparison utilized by the processing and transmitting
18   module further comprises an update program to obtain an
             updated state based on a previous state associated with said
19   first signal set and a measured state associated with said
             second signal set; wherein the measured state includes a
20   measurement of said second signal set and a predicted
             measurement obtained based on the first signal set without
21   using any derivatives of the first signal set.

22   The parties dispute the meaning of the two bolded claim phrases in claim 1 above.

23   i.   **"receiving and calculating said first and second signal sets from the data
                transmitting unit"**

24

Plaintiff's Proposed Construction	Defendant's Proposed Construction
receiving the first and second signal sets from the data transmitting unit and using the first and second signal sets for calculation	indefinite

28   Plaintiff argues that its construction "is consistent with the patent's specification," and

1   merely "reorganizes the language of the claims to provide additional clarity for the term." Dkt.

2   No. 57 ("Op'g Br.") at 9. Plaintiff contends that "[w]ithin the claim itself, 'receiving' is defined

3   as the communication with the motion sensors, and 'calculating' is defined as the calculation of a

4   resulting deviation using a comparison of the signals." *Id.* at 9-10.

5   　　　But the claim does not so clearly define those words. In fact, read in conjunction with the

6   specification, the claim appears to describe two separate calculations: the calculation of the first

7   and second signal sets, and the calculation of the resulting deviation. *See* '438 Patent at 8:24-29

8   ("The computing processor **348** receives and *calculates* the first and second signal sets from the

9   data transmitting unit **346**. The computing processor **348** *further communicates* with the six-axis

10   motion sensor module **302** *to calculate* the resulting deviation of the 3D pointing device . . . .")

11   (italic emphases added). Plaintiff's construction collapses these two ostensibly separate

12   calculations into one. Put together, the claim would read:

> 13   a computing processor for receiving the first and second signal sets
> from the data transmitting unit and using the first and second signal
> 14   sets for calculation, communicating with the six-axis motion sensor
> module to calculate a resulting deviation . . . by utilizing a
> 15   comparison to compare the first signal set with the second signal set.

16   As a result, the calculation of the first and second signal sets disappears, and instead those signal

17   sets are only "us[ed] . . . for calculation" of the resulting deviation. The Court finds that, contrary

18   to Plaintiff's assertion, such a construction would not be consistent with "the context of the

19   specification," which describes two separate calculations. *Ultimax Cement Mfg. Corp. v. CTS*

20   *Cement Mfg. Corp.*, 587 F.3d 1339, 1348 (Fed. Cir. 2009).

21   　　　Furthermore, Plaintiff's construction is not necessary to provide clarity regarding the use

22   of the first and second signal sets to calculate the resulting deviation, as the claim language itself

23   serves this function by teaching that the resulting deviation is calculated "by utilizing a

24   comparison to compare the first signal set with the second signal set." '438 Patent at 19:10-14.[1]

25

26

27   [1] At the claim construction hearing, Plaintiff's counsel seemed to acknowledge this point. *See*
Dkt. No. 69 ("Hr'g Tr.") at 56:4-7 ("[W]e would take a plain and ordinary meaning. It doesn't
require a construction. We just provide a construction to, kind of, help demonstrate that this term
28   is not indefinite.").

United States District Court
Northern District of California

1   Finally, the Court cannot "reorganize the language of the claims" to give terms meanings

2   that are not supported by the specification or the claim language itself. *See Chef Am., Inc. v.*

3   *Lamb-Weston, Inc.*, 358 F.3d 1371, 1374 (Fed. Cir. 2004) ("This court, however, repeatedly and

4   consistently has recognized that courts may not redraft claims, whether to make them operable or

5   to sustain their validity. Even a nonsensical result does not require the court to redraft the claims

6   of the . . . patent.") (internal quotation marks omitted); *Haemonetics Corp. v. Baxter Healthcare*

7   *Corp.*, 607 F.3d 776, 782 (Fed. Cir. 2010) ("[W]e do not redraft claims to contradict their plain

8   language in order to avoid a nonsensical result.").[2]

9   Defendant argues that the claim phrase is indefinite because it "does not make sense" for

10 the computing processor to calculate the signal sets. Dkt. No. 59 ("Resp. Br.") at 7. The Supreme

11 Court recently clarified the standard courts must use to determine whether patent claims are

12 invalid for indefiniteness under § 112 of the Patent Act. In *Nautilus, Inc. v. Biosig Instruments,*

13 *Inc.*, 134 S. Ct. 2120 (2014), the Supreme Court held "that a patent is invalid for indefiniteness if

14 its claims, read in light of the specification delineating the patent, and the prosecution history, fail

15 to inform, with reasonable certainty, those skilled in the art about the scope of the invention." 134

16 S. Ct. at 2124. That definiteness standard "mandates clarity, while recognizing that absolute

17 precision is unattainable." *Id.* at 2129. The Federal Circuit has since interpreted the *Nautilus*

18 holding to require that the intrinsic evidence "provide objective boundaries" on the scope of the

19 claim meaning. *Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364, 1371 (2014).

20 The Court finds that this claim phrase is not indefinite. The '438 Patent sufficiently

21 teaches the scope of the first and second signal sets such that it is reasonably certain that a person

22 skilled in the art would understand how such signal sets could be "calculated" according to the

23 ordinary meaning of that word. The *Nautilus* test "mandates clarity," not perfect logic.[3] The

---

[2] Moreover, the Court does not give any weight to Plaintiff's expert's conclusory testimony that "a
person of ordinary skill in the art would understand the term . . . as 'receiving the first and second
signal sets from the data transmitting unit and using the first and second signal sets for
calculation.'" Dkt. No. 57-6 ("Ahamed Decl.") at ¶ 23. Nor does the Court find it persuasive that
the patent examiner "readily understood the term when analyzing it against the alleged prior art
reference." Op'g Br. at 13.

[3] Defendant's citation to *Planet Bingo, LLC v. VKGS, LLC*, No. 12-cv-219-RHB, 2013 WL
1729574 (W.D. Mich. Apr. 22, 2013), does not persuasively support its position. In *Planet Bingo*,

United States District Court
Northern District of California

1   question of whether or not Defendant's allegedly infringing "computing processor" is actually

2   *capable* of calculating signal sets is better left to the infringement analysis.

3   The Court is required to construe claim terms only when the parties raise an "actual dispute

4   regarding the proper scope of the[] claims." *See O2 Micro*, 521 F.3d at 1360. Given the Court's

5   finding that this claim phrase is not indefinite, there is no "actual dispute" regarding the meaning

6   of the claim phrase. *See* Hr'g Tr. at 56:5-6 ("It doesn't require a construction."), 79:19-22 ("It

7   says you have to calculate those signal sets. So that processor has to both receive and calculate the

8   first and second signal sets. That would be my fallback."). Moreover, the claim phrase uses

9   ordinary words in ordinary ways that are readily comprehensible to a jury. *See Chef Am.*, 358

10   F.3d at 1373 ("These are ordinary, simple English words whose meaning is clear and

11   unquestionable. . . . They mean exactly what they say."). Accordingly, the Court rejects Plaintiff's

12   proposed construction, rejects Defendant's indefiniteness argument, and finds that no construction

13   of this claim phrase is necessary.

    ii.   **"utilizing a comparison to compare the first signal set with the second
           signal set"**

Plaintiff's Proposed Construction	Defendant's Proposed Construction
calculating using the first signal set and the second signal set	indefinite

18   Defendant does not appear to dispute that the '438 Patent properly discloses the

19   comparison of two "orientations" or "states," but argues that such comparisons would be different

20   from the comparison of "signal sets" described in claim 10. And because Defendant further

21   argues that it "does not make mathematical or physical sense to 'compare' these two quantities,"

22   Defendant contends that the claim phrase is indefinite. Resp. Br. at 9.

23   But Defendant's cited authority is not persuasive. In *Union Pacific Resources Co. v.*

24   *Chesapeake Energy Corp.*, 236 F.3d 684 (Fed. Cir. 2001), the Court found that the term

25   "comparing" was indefinite because "the precise meaning of the term . . . is not explained in the

27   the court rested its finding of indefiniteness on the fact that "[t]he plain language of the
     independent claims is incompatible with the plain language of the dependent claims." *Id.* at *7.

28   Here, Defendant does not argue that the dependent claims are inconsistent or fundamentally
     incompatible with the independent claims; as a result, *Planet Bingo* is inapposite.

1   written description" and the patent "does not define the means to 'compare' the two sets of

2   characterizing information." 236 F.3d at 692. In *Invensys Systems, Inc. v. Emerson Electric Co.*,

3   No. 12-cv-799, 2014 WL 3976371 (E.D. Tex. Aug. 6, 2014), the Court based its finding of

4   indefiniteness on the fact that "calculating a dot product where one of the inputs is a single number

5   is mathematically impossible," since "[i]t is . . . undisputed that calculating a dot product requires

6   a sequence of numbers." 2014 WL 3976371, at *5. Here, the patentee explicitly defined the term

7   "comparison" in the specification. *See* '438 Patent at 2:27-32 ("The term of 'comparison' of the

8   present invention may generally refer to the calculating and obtaining of the actual deviation

9   angles of the 3D pointing device **110** with respect to the first reference frame or spatial pointing

10   frame $X_pY_pZ_p$ utilizing signals generated by motion sensors while reducing or eliminating noises

11   associated with said motion sensors[.]"); Op'g Br. at 14 (agreeing that this section of the

12   specification explicitly defines the term "comparison"). Moreover, the Court is not persuaded that

13   it is "mathematically impossible" to compare the signal sets. Defendant's position depends on an

14   overly rigid construction of the term "signal sets" as "raw data from the signal sets." That two

15   measurements are made using different units does not make it "mathematically impossible" to

16   compare those measurements: Celsius may be converted to Fahrenheit, kilometers may be

17   converted to miles, and grams may be converted to cups. So long as the '438 Patent informs a

18   person having ordinary skill in the art "with reasonable certainty" how to compare the signal sets,

19   the claim term is not indefinite. And the Patent does so by explicitly defining "comparison" as the

20   calculation of "deviation angles," which calculation is described in further detail in the

21   specification. *See, e.g.*, '438 Patent 10:53-15:7. The specification also describes how those

22   deviation angles may be used to compare the signal sets—for example, through the use of

23   quaternions. *See, e.g.*, *id.* 11:48-12:11.

24   Accordingly, the Court finds that this claim phrase is not indefinite. But Plaintiff's

25   construction is not adequate, since it does not incorporate or even reference the specific definition

26   of "comparison" contained in the specification and does not clarify the scope of the overall claim

27   when combined with the rest of claim 1's language. Therefore, the Court construes this claim

28   phrase as "using the calculation of actual deviation angles to compare the first signal set with the

United States District Court
Northern District of California

8

1   second signal set," which clarifies the scope of the phrase and claim 1 as a whole using the

2   specification's explicit definition of "comparison."

3   **2. '978 Patent**

4   The '978 Patent discloses a similar device and method as the '438 Patent, except the '978

5   Patent invention uses a third motion sensor, a magnetometer, in addition to the accelerometer and

6   gyroscope disclosed by the '438 Patent. In addition, the '978 Patent discloses two computing

7   processors as opposed to the single computing processor disclosed in the '438 Patent.

8   Independent claim 1 describes:

9   1. A 3D pointing device, comprising:

10   an orientation sensor, generating an orientation output associated
                         with an orientation of the 3D pointing device associated with
11   three coordinate axes of a global reference frame associated with
                         Earth;

12
                         a rotation sensor, generating a rotation output associated with a
13   rotation of the 3D pointing device associated with three
                         coordinate axes of a spatial reference frame associated with the
14   3D pointing device; and

15   a first computing processor, **using the orientation output and
                         the rotation output to generate a transformed output**
16   **associated with a fixed reference frame associated with a**
                         display device;
17
                         wherein the orientation sensor comprises:
18
                         an accelerometer, generating a first signal set comprising axial
19   accelerations associated with movements and rotations of the 3D
                         pointing device in the spatial reference frame;
20
                         a magnetometer, generating a second signal set associated with
21   Earth's magnetism; and

22   a second computing processor, generating the orientation output
                         based on the first signal set, the second signal set and the
23   rotation output or based on the first signal set and the second
                         signal set;
24
                         wherein the rotation sensor, the accelerometer, and the
25   magnetometer forming a nine-axis motion sensor module; the
                         3D pointing device is configured for obtaining one or more
26   resultant deviation including a plurality of deviation angles using
                         a plurality of measured magnetisms Mx, My, Mz and a plurality
27   of predicted magnetism Mx', My' and Mz'.

28   The parties dispute the meaning of the bolded claim phrase in claim 1 above. The same

United States District Court
Northern District of California

9

1   claim phrase also appears in independent claim 10.

2   **iii.   "using the orientation output and the rotation output to generate a**
3   **transformed output associated with a fixed reference frame associated with**
     a display device"

Plaintiff's Proposed Construction	Defendant's Proposed Construction
using the orientation output and the rotation output to generate an output, which is associated with movements and rotations of the 3D pointing device and a 2-dimensional display plane parallel to or the same as a display screen	transforming the rotation output using the orientation output to generate a two-dimensional movement in a plane that is parallel to the screen of a display device and does not move or rotate

9   The parties first dispute whether the claim phrase requires that the "rotation output," in

10   particular, be transformed. Defendant contends that the specification's description of the sub-steps

11   of a disclosed embodiment "define[s] how to calculate the transformed output," and that those

12   sub-steps "calculate[] the transformed output based on the transformed rotation." Resp. Br. at 15.

13   Defendant's construction improperly imports a limitation from a preferred embodiment

14   and three dependent claims into the independent claim. *See Kaneka Corp. v. Xiamen*

15   *Kingdomway Grp. Co.*, 2015 WL 3613644, at *6 (Fed. Cir. June 10, 2015) ("[I]t would be

16   improper to import a claim limitation from a dependent claim into an independent claim."). The

17   plain language of the independent claim requires only that the rotation output be "used" to

18   generate the transformed output, whereas certain dependent claims and a preferred embodiment

19   add the limitation that a "transformed rotation" be generated before the transformed output may be

20   generated. *See* '978 Patent at 33:11-17 & claims 5 ("The 3D pointing device of claim **1**, wherein

21   the first computing processor . . . generates a transformed rotation associated with the fixed

22   reference frame . . . , and generates the transformed output based on the transformed rotation."), 8,

23   9. The Court declines to graft this limitation onto the independent claim.

24   Plaintiff's construction, on the other hand, omits entirely the clear requirement that the

25   generated output be "transformed." The Court therefore also declines to adopt Plaintiff's proposed

26   construction.

27   The Court sees no need to depart from the plain meaning of the readily understandable

28   words used in the first part of this claim phrase ("using the orientation output and the rotation

10

1 output to generate a transformed output").[4] Since the parties do not dispute the scope of the

2 particular words used and the claim as written is readily comprehensible, the Court finds that no

3 construction is required.

4 As for the latter part of the claim phrase, Defendant argues that the specification

5 consistently uses the term "fixed" in relation to "a non-moving display separate from the 3D

6 pointing device." Resp. Br. at 16. But Defendant's proposed construction conflates the "display

7 device" and the "reference frame," and it excludes certain disclosed embodiments. What is

8 "fixed" is the "reference frame," not the display device itself. The reference frame is a spatial

9 plane rather than a physical object. Thus, the display device may move, but the reference frame

10 by which the device's movements are translated remains fixed. Furthermore, the specification

11 describes embodiments in which the display device is integrated into the same hardware as the

12 motion sensor device. *See* '978 Patent at 5:6-8 (disclosing "a display frame either external to the

13 device of the present invention or integrated therein"), 13:13-16 ("[T]he above-mentioned display

14 reference frame associated with a display may need not to be [sic] external to the spatial reference

15 frame in terms of the hardware configuration of the present invention."), 13:21-24 ("[I]n one

16 embodiment, . . . [a] built-in display **682** may too be integrated on the housing **630**."). As a logical

17 consequence, if they are attached, the display device must be capable of moving and rotating along

18 with the motion sensor device.

19 In line with the above analysis, the Court construes this claim phrase as "using the

20 orientation output and the rotation output to generate a transformed output that corresponds to a

21 two-dimensional movement in a plane that is parallel to the screen of a display device."

---

[4] At the claim construction hearing, both parties' counsel seemed to agree with the Court's
position on this issue. *See* Hr'g Tr. at 85:4-6 ("We don't need to construe. We can use the exact
language of the claim. We think it's sufficient enough with the claim language itself."), 90:18-20
("They removed 'transformation.' If they want [to] put it back in, then I don't think we would
have an objection to putting it back in, because it's right.").
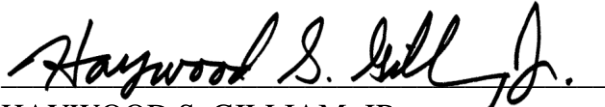
III.   CONCLUSION

The Court construes the disputed terms as follows:

Term	Asserted Claims	Construction
receiving and calculating said first and second signal sets from the data transmitting unit	'438 Patent claim 1	no construction necessary
utilizing a comparison to compare the first signal set with the second signal set	'438 Patent claim 1	using the calculation of actual deviation angles to compare the first signal set with the second signal set
using the orientation output and the rotation output to generate a transformed output associated with a fixed reference frame associated with a display device	'978 Patent claims 1 and 10	using the orientation output and the rotation output to generate a transformed output that corresponds to a two-dimensional movement in a plane that is parallel to the screen of a display device

A case management conference will be held on September 29, 2015, at 2:00 p.m., in Courtroom 15, 18th Floor, 450 Golden Gate Avenue, San Francisco. The parties shall file an updated joint case management statement by September 22, 2015, and should be prepared to discuss the remainder of the case schedule.

IT IS SO ORDERED.

Dated: September 9, 2015

HAYWOOD S. GILLIAM, JR.
United States District Judge